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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/556,662	04/24/2000	Rolf Bruck	E-40559	7587

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EXAMINER

TRAN, BINH Q

ART UNIT	PAPER NUMBER
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3748

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DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/556,662

Applicant(s)

BRUCK ET AL.

Examiner

BINH Q. TRAN

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— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5,6,8-17 and 26-32 is/are rejected.
- 7) ☒ Claim(s) 2-4,7,18-25,33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 April 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, *“at least one heat exchanger is a tube having two walls, an interior through which exhaust gas flows and a chamber between said two walls through which coolant flows”* in claim 29; and *“at least one heat exchanger is a ribbed tube section of said exhaust tract around which coolant flows”* in claim 30; must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under

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the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1, 5, 8, 12, and 14-17 are rejected under 35 U.S.C. 102 (b) as being anticipated by Hansel (Patent Number 5,524,432).

Regarding claims 1, and 12, Hansel discloses a method for regulating the temperature range of an NOx accumulator (e.g. 105) for purifying an internal combustion engine (101) exhaust gas stream guided in an exhaust tract, the improvement which comprises: discharging a heat flow from the exhaust gas stream upstream of the NOx accumulator as a function of an operating state of the internal combustion engine, for at least one of reliably preventing a maximum load temperature of the NOx accumulator from being exceeded and essentially maintaining a predeterminable temperature range (e.g. See col. 10, lines 1-67; col. 11, lines 1-23).

Regarding claims 5, 14, Hansel further discloses that storing NOx in the NOx accumulator additionally acting as an oxidation catalytic converter (e.g. See col. 10, lines 1-67; col. 11, lines 1-23).

Regarding claim 8, Hansel further discloses that regulating the discharge of the heat flow, using a regulating variable being a predeterminable range of the temperature of the NOx accumulator as a function of the load of the internal combustion engine (e.g. See col. 10, lines 30-57).

Regarding claim 15, Hansel discloses an exhaust gas catalytic converter system, comprising: an internal combustion engine (101) emitting an exhaust gas stream; an exhaust tract

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(7, 19) guiding the exhaust gas stream; an NOx accumulator (105) disposed in said exhaust tract and having a temperature range to be regulated for purifying the exhaust gas stream; at least one catalytic converter (107) disposed in said exhaust tract; and at least one heat exchanger (103) disposed upstream of said NOx accumulator in said exhaust tract.

Regarding claim 16, Hansel further discloses that internal combustion engine is a diesel engine (See col. 5, lines 41-64).

Regarding claim 17, Hansel further discloses that said internal combustion engine is a lean burn engine (See col. 5, lines 22-41).

Claims 15, 26, and 28-32 are rejected under 35 U.S.C. 102 (e) as being anticipated by Sung et al. (Sung) (Patent Number 5,685,145).

Regarding claim 15, Sung discloses an exhaust gas catalytic converter system, comprising: an internal combustion engine (26) emitting an exhaust gas stream; an exhaust tract (25, 27, 29) guiding the exhaust gas stream; an NOx accumulator (30) disposed in said exhaust tract and having a temperature range to be regulated for purifying the exhaust gas stream; at least one catalytic converter (e.g. 10, 28) disposed in said exhaust tract; and at least one heat exchanger (e.g. 10, 28) disposed upstream of said NOx accumulator in said exhaust tract (See Figs. 2A-2D).

Regarding claim 26, Sung further discloses that NOx accumulator has a three-way catalytic coating (See col. 7, lines 65-67; col. 8, lines 1-20).

Regarding claim 28, Sung further discloses that at least one heat exchanger is a countercurrent heat exchanger (See col. 5, lines 40-67; col. 6, lines 1-2).

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Regarding claim 29, Sung further discloses that at least one heat exchanger is a tube having two walls, an interior through which exhaust gas flows and a chamber between said two walls through which coolant flows (See col. 5, lines 40-67; col. 6, lines 1-51).

Regarding claim 30, Sung further discloses that at least one heat exchanger is a ribbed tube section of said exhaust tract around which coolant flows (See col. 5, lines 40-67; col. 6, lines 1-51).

Regarding claim 31, Sung further discloses that the coolant is water or air flowing as a forced flow through said at least one heat exchanger (See col. 5, lines 40-67; col. 6, lines 1-51).

Regarding claim 32, Sung further discloses that coolant is water or air flowing as a forced flow through said at least one heat exchanger (See col. 5, lines 40-67; col. 6, lines 1-51).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 9-11, 13, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of Hansen and Sung in view of design choice.

Regarding claims 6, 9-11, 13, and 27, any one of Hansen and Sung discloses all the claimed limitation as discussed above except discharging the heat flow at 5 kW to 50 kW, and the temperature of the NOx accumulator between 150°C and 700°C.

Regarding the specific range of the heat flow, and the temperature of the NO_x accumulator, it is the examiner's position that a range between 5 kW to 50 kW heat flow, and the temperature between 150°C and 700°C of the NO_x accumulator, would have been an obvious matter of design choice well within the level of ordinary skill in the art, depending on variables such as mass flow rate of the exhaust gas, as well as the concentration of oxygen in the exhaust gas, the engine operating conditions, properties of materials for making the NO_x storage catalyst, and the controlled temperature of the catalytic converter. Moreover, there is nothing in the record which establishes that the claimed parameters present a novel or unexpected result (See *In re Kuhle*, 562 F.2d 553, 188 USPQ 7 (CCPA 1975)).

Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art. In *re Dreyfus*, 22 CCPA (Patents) 830, 73 F.2d 931, 24 USPQ 52; In *re Waite et al.*, 35 CCPA (Patents) 1117, 168 F.2d 104, 77 USPQ 586. Such ranges are termed "critical" ranges, and the applicant has the burden of proving such criticality. In *re Swenson et al.*, 30 CCPA (Patents) 809, 132 F.2d 1020, 56 USPQ 372; In *re Scherl*, 33 CCPA (Patents) 1193, 156 F.2d 72, 70 USPQ 204. However, even though applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within the capabilities of one skilled in the art. In *re Sola*, 22 CCPA (Patents) 1313, 77 F.2d 627, 25 USPQ 433; In *re Normann et al.*, 32 CCPA (Patents) 1248, 150 F.2d 627, 66 USPQ 308; In *re Irmischer*, 32 CCPA (Patents) 1259, 150 F.2d 705, 66 USPQ 314. More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In *re Swain et*

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al., 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; Minnesota Mining and Mfg. Co. v. Coe, 69 App. D.C. 217, 99 F.2d 986, 38 USPQ 213; Allen et al. v. Coe, 77 App. D.C. 324, 135 F.2d 11, 57 USPQ 136.

Allowable Subject Matter

Claims 2-4, 18-25, and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Since allowable subject matter has been indicated, applicant is encouraged to submit formal drawings in response to this Office action. The early submission of formal drawings will permit the Office to review the drawings for acceptability and to resolve any informalities remaining therein before the application is passed to issue. This will avoid possible delays in the issue process.

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents:

Borroni-Bird et al. (Patent Number 5983628), Zahn et al. (Patent Number 5613359), Haines (Patent Number 6347511), Modica et al. (Patent Number 5687565), and Sung et al. (Patent Number 5603215) all disclose an exhaust gas purification for use with an internal combustion engine.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (703) 305-0245. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reach on (703) 308-2623. The fax phone number for this group is (703) 746-4561.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.

A handwritten signature in black ink, appearing to read 'Binh Tran', with a long horizontal stroke extending to the left.

BT
April 16, 2003

Binh Tran
Patent Examiner
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